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10/798,146	03/11/2004	Antony K. Spilman	30030483 US02	5575

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Kathy Manke
Avago Technologies Limited
4380 Ziegler Road
Fort Collins, CO 80525

EXAMINER	
LIU, LI	

ART UNIT	PAPER NUMBER
2613	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

avagoip@system.foundationip.com
kathy.manke@avagotech.com
scott.weitzel@avagotech.com

Office Action Summary	Application No.	Applicant(s)	
	10/798,146	SPILMAN ET AL.	
	Examiner	Art Unit	
	Li Liu	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 November 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. Claims 1-3, 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alb et al (US 6,760,391) in view of the applicant admitted prior art (AAPA: page 5, line 19-22) and Nowell et al (US 7,292,608).

1). With regard to claim 1, Alb et al discloses a rate adaptive system for optical communication networks (Figures 3-10, column 4, line 20-24) comprising:

a plurality of optical transceivers (305, 310, 405 and 410 in Figures 3 and 4, column 4, line 20-24) capable of transmitting and receiving signals at a plurality of rates to each other, and

an optical fiber linked to said transceivers (link 12-14 in Figures 1, 3 and 4, column 4, line 20-24),

wherein said system is configured to cause said transceivers to transmit and receive signals at an initial rate and to adapt said initial rate based upon an error condition (Figures 5-10) responsive to an optical signal parameter (since the optical fiber are used between the CO and the CPE units, the optical signals are transmitted between the CO and CPE units, and the SNR is an optical parameter or OSNR; and other parameters such as amplitude and phase distortion and the error rate are also

based on the optical signal, therefore they are optical parameters, column 6, line 12-27) by causing said transceivers to transmit and receive at different rate (column 5 line 33-47, column 13 line 35 to column 18 line 3, and column 19 line 27-35).

But, Alb et al does not expressly state wherein the error condition comprises one of a code word violation and an optical modulation amplitude.

However, Alb et al discloses that the equalizer (346 and 446 in Figures 3 and 4) counteract the effect of amplitude and phase distortion introduced by the channel; and the equalizer feeds an error signal to an SNR measurement module (348 and 448 in Figures 3 and 4). That is the error condition detected comprises an optical modulation amplitude.

Also, the error condition based on a code word violation or an optical modulation amplitude is well known and widely used in the art. As admitted by the AAPA: "It should be obvious to those skilled in the art that error conditions other than synchronisation could be used for example: code word violations on the received optical signal or low received optical modulation amplitude (OMA)" (AAPA: page 5, line 19-22).

Another prior art, Nowell et al, teaches to use code word violation to assert a loss of synchronization condition (column 3, line 7-9 and column 6, line 42-45); and the coding allows error detection by monitoring for invalid codewords at the receiver (column 6, line 22-24).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the code word violations on the received optical signal or low received optical modulation amplitude as widely used in the art to the

system of Alb et al so that error condition can be can be detected and proper judgment can be made based on the error detected.

2). With regard to claim 2, Alb et al and the AAPA and Nowell et al discloses all of the subject matter as applied to claim 1 above. And Alb et al and Nowell et al further disclose wherein said error condition is a failure to synchronize a received signal (Alb et al: column 5 line 33-47, column 13 line 35 to column 18 line 3, the error account and SNR of the received signal can be the results of loss of synchronization; and each received frame has a synchronization field, and the decoders 340 and 440 comprises a synchronization circuitry and the error counting element, the error counting element in the decoder is updated each time an error is detected by the error detector; the value of the error count register is made available to the baseband digital interface, and finally used for changing the respective line rate, column 5 line 33 to column 6 line 62, Figure 5, 6, 9 and 10. Nowell et al also teaches to use code word violation the violation to assert a loss of synchronization condition, column 3, line 7-9 and column 6, line 42-45).

3). With regard to claim 3, Alb et al and the AAPA and Nowell et al discloses all of the subject matter as applied to claim 1 above. And Alb et al further discloses wherein said system is further configured to calculate an error coefficient (SNR or BER is calculated, Figures 5-9, column 13 line 35 to column 18 line 3) based on said received signals, and said error condition comprises said error coefficient exceeding a predefined range (Figure 5, threshold is used for adjusting the rate).

4). With regard to claim 9, Alb et al discloses a rate adaptive method for operating an optical communication network (Figures 3-10, column 4, line 20-24) comprising:

transmitting data at an initial rate (Figures 3-9, transmitter 310 and 410 transmit signal at a initial rate, and the BER or SNR is calculated for changing of rate, column 5 line 33-47, column 13 line 35 to column 18 line 3, and column 19 line 27-35),

receiving said data at initial rate (Figures 3-9, receiver 305 and 405 receive signal at a initial rate, and the BER or SNR is calculated for changing of rate, column 5 line 33-47, column 13 line 35 to column 18 line 3, and column 19 line 27-35),

evaluating said data responsive to a parameter observed on an optical signal (since the optical fiber are used between the CO and the CPE units, the optical signals are transmitted between the CO and CPE units, and the SNR is an optical parameter or OSNR; and other parameters such as amplitude and phase distortion and the error rate are also based on the optical signal, therefore they are optical parameters, column 6, line 12-27) to determine if an error condition exists (Figures 5-9, column 13 line 35 to column 18 line 3, and column 19 line 27-35), and

adapting said rate based upon said evaluation by transmitting and receiving at different rate (Figures 5-9, column 13 line 35 to column 18 line 3, and column 19 line 27-35).

But, Alb et al does not expressly state wherein the error condition comprises one of a code word violation and an optical modulation amplitude.

However, Alb et al discloses that the equalizer (346 and 446 in Figures 3 and 4) counteract the effect of amplitude and phase distortion introduced by the channel; and the equalizer feeds an error signal to an SNR measurement module (348 and 448 in Figures 3 and 4). That is the error condition detected comprises an optical modulation amplitude.

Also, the error condition based on a code word violation or an optical modulation amplitude is well known and widely used in the art. As admitted by the AAPA: "It should be obvious to those skilled in the art that error conditions other than synchronisation could be used for example: code word violations on the received optical signal or low received optical modulation amplitude (OMA)" (AAPA: page 5, line 19-22).

Another prior art, Nowell et al, teaches to use code word violation to assert a loss of synchronization condition (column 3, line 7-9 and column 6, line 42-45); and the coding allows error detection by monitoring for invalid codewords at the receiver (column 6, line 22-24).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the code word violations on the received optical signal or low received optical modulation amplitude as widely used in the art to the system of Alb et al so that error condition can be can be detected and proper judgment can be made based on the error detected.

5). With regard to claim 12, Alb et al discloses an optical transceiver module (Figures 3-10, column 4, line 20-24) for a rate adaptive system for communication networks comprising:

means (305 and 405 in Figures 3 and 4, column 4, line 20-24) for transmitting a signal via a link at a plurality of optical signal rates,

means (310 and 410 in Figures 3 and 4, column 4, line 20-24) for receiving an optical signal transmitted at said plurality of optical signal rates,

means for determining an error condition Figures 5-9, column 13 line 35 to column 18 line 3, and column 19 line 27-35) responsive to a parameter derived from observation of the optical signal (since the optical fiber are used between the CO and the CPE units, the optical signals are transmitted between the CO and CPE units, and the SNR is an optical parameter or OSNR; and other parameters such as amplitude and phase distortion and the error rate are also based on the optical signal, therefore they are optical parameters, column 6, line 12-27), and

means for adapting an optical signal transmission rate based upon the error condition by transmitting and receiving at different rate (Figures 5-9, column 13 line 35 to column 18 line 3, and column 19 line 27-35).

But, Alb et al does not expressly state wherein the error condition comprises one of a code word violation and an optical modulation amplitude.

However, Alb et al discloses that the equalizer (346 and 446 in Figures 3 and 4) counteract the effect of amplitude and phase distortion introduced by the channel; and the equalizer feeds an error signal to an SNR measurement module (348 and 448 in Figures 3 and 4). That is the error condition detected comprises an optical modulation amplitude.

Also, the error condition based on a code word violation or an optical modulation amplitude is well known and widely used in the art. As admitted by the AAPA: "It should be obvious to those skilled in the art that error conditions other than synchronisation could be used for example: code word violations on the received optical signal or low received optical modulation amplitude (OMA)" (AAPA: page 5, line 19-22).

Another prior art, Nowell et al, teaches to use code word violation to assert a loss of synchronization condition (column 3, line 7-9 and column 6, line 42-45); and the coding allows error detection by monitoring for invalid codewords at the receiver (column 6, line 22-24).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the code word violations on the received optical signal or low received optical modulation amplitude as widely used in the art to the system of Alb et al so that error condition can be can be detected and proper judgment can be made based on the error detected.

3. Claims 4, 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alb et al (US 6,760,391) and the AAPA and Nowell et al (US 7,292,608) as applied to claims 1 and 9 above, and in view of Gfeller (US 5,808,760).

Alb et al and the AAPA and Nowell et al disclose all of the subject matter as applied to claims 1 and 9 above. Alb et al discloses wherein said initial rate is lowered in response to said error condition (Figures 5-9, column 5 line 33-47, column 13 line 35 to column 18 line 3).

But, Alb et al does not expressly disclose that the initial rate is lowered according to predefined percentages of the initial rate; wherein said percentages are selected from the group of 75, 50, and or 25 percent of said initial rate

However, Gfeller, in the same field of endeavor, discloses a four predetermined rates (10 MBPS, 1 MBPS, 100 KBPS and 10 KBPS in Figure 6, column 10, line 3-9). Gfeller provides an enhanced flexibility in system design and simplification of integration of systems operating with different data rate. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the rate adaptive system taught by Gfeller to the optical communication system of Alb et al so that an enhanced flexibility in system design and simplification of integration of systems operating with different data rate can be obtained.

Although Alb et al and Gfeller don't disclose the specific percentages, such limitations are merely a matter of design choice and would have been obvious in the system of Alb et al and Gfeller. Gefeller discloses a four predetermined rate (10 MBPS, 1 MBPS, 100 KBPS and 10 KBPS in Figure 6, column 10, line 3-9). The limitations in claims 4, 5 and 10 do not define a patentably distinct invention over that in Alb et al and Gfeller since both the invention as a whole and Alb et al and Gfeller are directed to downshift the rate in predetermined percentages while link failure occurs. Therefore, to downshift by 75, 50 and 25 % or other percentages would have been a matter of obvious design choice to one of ordinary skill in the art.

4. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alb et al (US 6,760,391) and the AAPA and Nowell et al (US 7,292,608) as applied to claim 1 above, and in further view of Stener (US 6,690,650).

1). With regard to claim 6, Alb et al and the AAPA and Norwell et al disclose all of the subject matter as applied to claim 1 above. But Alb et al does not disclose wherein said initial rate is 10 Gb/s.

However, Stener, in the same field of endeavor, discloses that the initial rate is set to the highest possible rate (the initial rate is set to 100 Mb/s, if link failure, the rate is downshifted to 10 Mb/s, column 5, line 38-59). As admitted by applicant: "currently there is a vast network of installed optical fiber links of various lengths and bandwidth all of which are capable of handling a variety of transmission rates from a few Gb/s to as high as many 10 of Gb/s. Installing a new network of optical components all capable of operating at a higher transmission rate, for example, 10 Gb/s across the wide installed base of performances, is not economically feasible in today's climate. Customers are not willing to upgrade these links because they "may" have a low bandwidth fiber" (AAPA: Brief Description of Related Development, page 2 line 1-7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to set the initial rate at the highest possible rate (e.g. 10 Gb/s) as taught by Stener to the optical communication so that a best use of the optical resources can be obtained.

2). With regard to claim 7, and the AAPA and Norwell et al disclose all of the subject matter as applied to claim 1 above. But Alb et al does not expressly disclose wherein said system is configured to operate in an optical Ethernet network.

However, Stener discloses a system configured to operate in an optical Ethernet network (Figure 1, column 3, line 1-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the rate-adaptive system to an optical Ethernet network so that a best use of the optical resources can be obtained.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alb et al (US 6,760,391) and the AAPA and Nowell et al (US 7,292,608) as applied to claims 1, 9 and 10 above, and in further view of Bremer et al (US 6,647,058).

Alb et al and the AAPA and Nowell et al disclose all of the subject matter as applied to claim 1 above. But Alb et al does not expressly disclose wherein said system is further configured to notify a network operator in the event of said error condition.

However, Bremer discloses a network management system (58 in Figure 2) used by a technician to target communication links that will benefit the most from power and/or data rate adaptation (column 9, line 43-46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the network manager as taught by Bremer et al to the communication system of Alb et al so that rate adaptation can be more efficiently managed, and any fault can be more easily identified.

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alb et al (US 6,760,391) and the AAPA and Nowell et al (US 7,292,608) and Gfeller (US 5,808,760) as applied to claims 9 and 10 above, and in further view of Bremer et al (US 6,647,058).

Alb et al and the AAPA and Nowell et al and Gfeller disclose all of the subject matter as applied to claims 9 and 10 above. But Alb et al does not expressly disclose wherein said system is further configured to notify a network operator in the event of said error condition.

However, Bremer discloses a network management system (58 in Figure 2) used by a technician to target communication links that will benefit the most from power and/or data rate adaptation (column 9, line 43-46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the network manager as taught by Bremer et al to the communication system of Alb et al so that rate adaptation can be more efficiently managed, and any fault can be more easily identified.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alb et al (US 6,760,391) in view of the applicant admitted prior art (AAPA: page 5, line 19-22) and Nowell et al (US 7,292,608) and Bremer (US 6,647,058).

Alb et al discloses a rate adaptive method for operating an optical communication network (Figures 3-10, column 4, line 20-24) comprising:

transmitting signals at an initial rate (Figures 3-9, transmitter 310 and 410 transmit signal at a initial rate, and the BER or SNR is calculated for changing of rate, column 5 line 33-47, column 13 line 35 to column 18 line 3, and column 19 line 27-35),

receiving said signals at said initial rate (Figures 3-9, receiver 305 and 405 receive signal at a initial rate, and the BER or SNR is calculated for changing of rate, column 5 line 33-47, column 13 line 35 to column 18 line 3, and column 19 line 27-35),

evaluating said signals to determine if an error condition exists (Figures 5-9, column 13 line 35 to column 18 line 3, and column 19 line 27-35), and

adapting said rate based upon said evaluation by transmitting and receiving at a different rate (Figures 5-9, column 13 line 35 to column 18 line 3, and column 19 line 27-35).

But, Alb et al does not expressly disclose (A) the signals are "test signals"; (B) wherein the error condition comprises one of a code word violation and an optical modulation amplitude.

With regard to item (A), however, Bremer et al, in the same field of endeavor, discloses a test data that can be used to try whether the test data support the data rate (column 6 line 30-43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the rate adaptive system and the test signal as taught by Bremer et al to the system of Alb et al so that a best use of the optical resources can be obtained and any suspensions of communication can be avoided.

With regard to item (B), however, Alb et al discloses that the equalizer (346 and 446 in Figures 3 and 4) counteract the effect of amplitude and phase distortion introduced by the channel; and the equalizer feeds an error signal to an SNR measurement module (348 and 448 in Figures 3 and 4). That is the error condition detected comprises an optical modulation amplitude.

Also, the error condition based on a code word violation or an optical modulation amplitude is well known and widely used in the art. As admitted by the AAPA: "It should be obvious to those skilled in the art that error conditions other than synchronisation could be used for example: code word violations on the received optical signal or low received optical modulation amplitude (OMA)" (AAPA: page 5, line 19-22).

Another prior art, Nowell et al, teaches to use code word violation to assert a loss of synchronization condition (column 3, line 7-9 and column 6, line 42-45); and the coding allows error detection by monitoring for invalid codewords at the receiver (column 6, line 22-24).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the code word violations on the received optical signal or low received optical modulation amplitude as widely used in the art to the system of Alb et al so that error condition can be can be detected and proper judgment can be made based on the error detected.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kleider et al (US 6,301,265) discloses an adaptive rate system and method for network communications.

Marchetto et al (US 5,914,959 discloses a communication system having an automatically selectable transmission rate.

Chow et al (US 5,479,447).

Kamalov et al (US 7,149,424).

Barry et al (US 2001/0024457) discloses an error condition comprises code word violation.

Woolf et al (US 2004/0136708) discloses a failure based on the optical modulation amplitude (OMA).

Majima et al (US 5,552,919) discusses the correspondence between the error signal and modulation amplitude.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Li Liu whose telephone number is (571)270-1084. The examiner can normally be reached on Mon-Fri, 8:00 am - 5:30 pm, alternating Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571)272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Li Liu, January 13, 2008

KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER